```
=> d his

     (FILE 'HOME' ENTERED AT 16:30:03 ON 21 NOV 2007)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 16:33:52 ON 21 NOV 2007
L1          138 S PYRIDOXINE (P) ?GLUCOS?  (P) SYNTHE?
L2            0 S L1 AND LEAVING GROUP?
L3            0 S L1 AND HALOGEN?
L4            0 S L1 AND HALIDE?
L5           28 S L1 AND ?THIO?
L6          110 S L1 NOT L5
L7           18 S L6 AND ?GLUCOSIDE?
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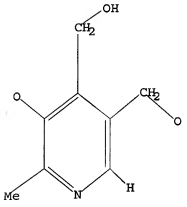
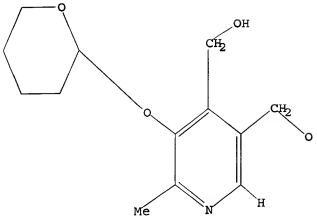
=> d l1
L1 HAS NO ANSWERS
L1 STR



Structure attributes must be viewed using STN Express query preparation.

=> d l1
L1 HAS NO ANSWERS
L1 STR



Structure attributes must be viewed using STN Express query preparation.

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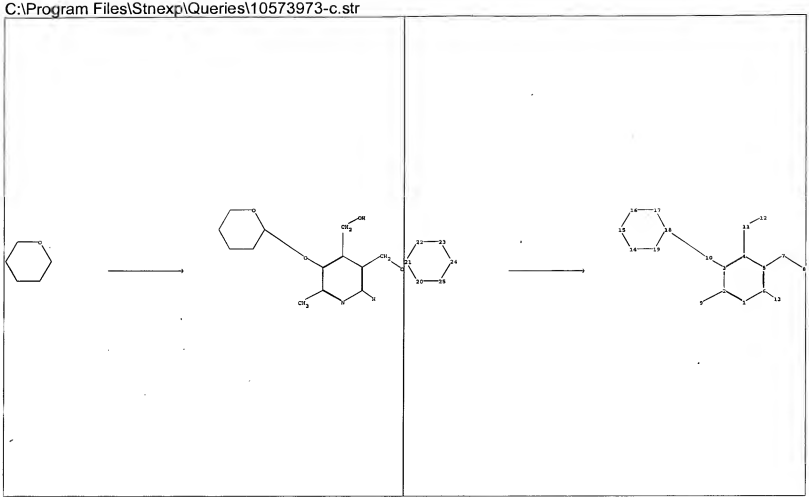

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7 8 9 10 11 12 13
ring nodes :
1 2 3 4 5 6 14 15 16 17 18 19 20 21 22 23 24 25
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2-9 3-10 4-11 5-7 6-13 7-8 10-18 11-12
ring bonds :
1-2 1-6 2-3 3-4 4-5 5-6 14-15 14-19 15-16 16-17 17-18 18-19 20-21 20-25 21-22 22-23 23-24 24-25
exact/norm bonds :
3-10 10-18 14-15 14-19 15-16 16-17 17-18 18-19 20-21 20-25 21-22 22-23 23-24 24-25
exact bonds :
2-9 4-11 5-7 6-13 7-8 11-12
normalized bonds :
1-2 1-6 2-3 3-4 4-5 5-6

Match level :
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:CLASS 8:CLASS 9:CLASS 10:CLASS 11:CLASS 12:CLASS 13:CLASS 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom 20:Atom 21:Atom 22:Atom 23:Atom 24:Atom 25:Atom
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fragments assigned reactant/reagent role:

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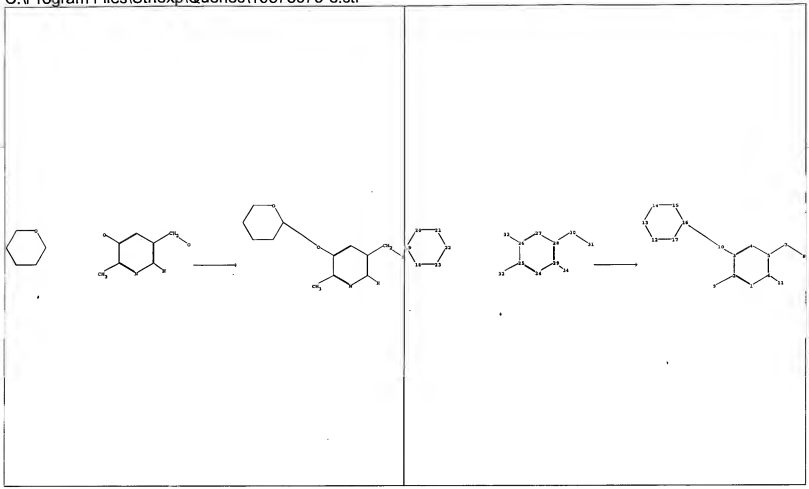
C:\Program Files\Stnexp\Queries\10573973-e.str



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ring nodes :
1 2 3 4 5 6 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
chain bonds :
2-9 3-10 5-7 6-11 7-8 10-16 25-32 26-33 28-30 29-34 30-31
ring bonds :
1-2 1-6 2-3 3-4 4-5 5-6 12-13 12-17 13-14 14-15 15-16 16-17 18-19 18-23 19-20 20-21 21-22 22-23 24-25 24-29 25-26 26-27 27-28 28-29
exact/norm bonds :
3-10 10-16 12-13 12-17 13-14 14-15 15-16 16-17 18-19 18-23 19-20 20-21 21-22 22-23 26-33
exact bonds :
2-9 5-7 6-11 7-8 25-32 28-30 29-34 30-31
normalized bonds :
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Match level :
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fragments assigned reactant/reagent role:

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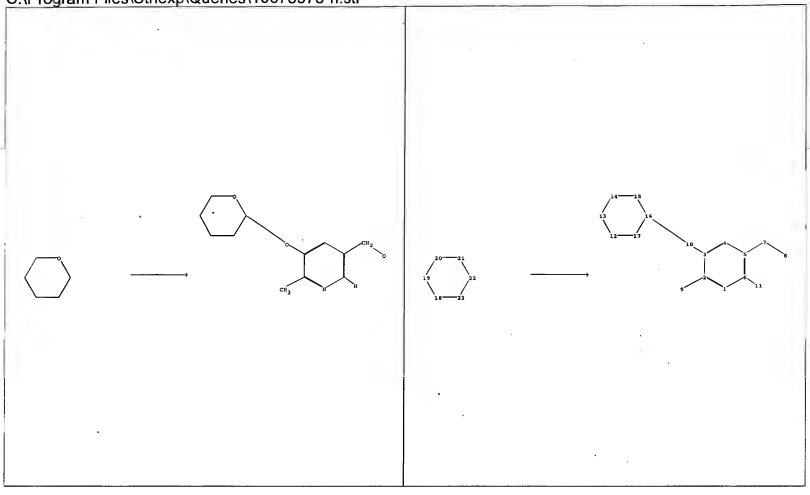

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ring nodes :
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ring bonds :
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exact/norm bonds :
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exact bonds :
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normalized bonds :
1-2 1-6 2-3 3-4 4-5 5-6

Match level :
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:CLASS 8:CLASS 9:CLASS 10:CLASS 11:CLASS 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom 20:Atom 21:Atom 22:Atom 23:Atom
fragments assigned product role:
containing 1
fragments assigned reactant/reagent role:
containing 18

L4 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:324175 CAPLUS
DOCUMENT NUMBER: 142:397731
TITLE: Stable vitamin B6 derivatives
INVENTOR(S): Sakamoto, Keiji; Wada, Koichi; Ito, Hajime; Take, Nobuhiro; Morimoto, Hiroshi; Maniwa, Fumio; Shimmoto, Yukiko
PATENT ASSIGNEE(S): Daiichi Fine Chemical Co., Ltd., Japan
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005033123	A1	20050414	WO 2004-JP14768	20040930
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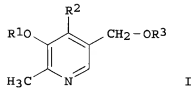
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2544574	A1	20050414	CA 2004-2544574	20040930
EP 1679316	A1	20060712	EP 2004-773642	20040930
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
CN 1863811	A	20061115	CN 2004-80028719	20040930
IN 2006CN01487	A	20070629	IN 2006-CN1487	20060501
US 2007148108	A1	20070628	US 2007-573973	20070222

PRIORITY APPLN. INFO.:			
	JP 2003-342918	A	20031001
	JP 2004-155624	A	20040526
	WO 2004-JP14768	W	20040930

GI



I

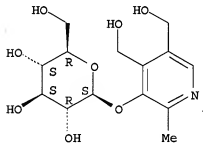
AB Disclosed are pyridoxine derivs. (I) (wherein R1 represents a glycosyl group, a phosphoric acid group , or a cyclic phosphoric acid group bonded with R2; R2 represents -CH2OH, -CHO, -CH2NH2, -CH2-amino acid residue or -CH2-OPO2H; and R3 represents a hydrogen atom or -PO3H2) or a salt thereof. Also disclosed is a composition for cosmetics, drugs, foods and/or animal feed which contains such a compound or a salt thereof. Pyridoxine 3-β-D-glucoside was prepared and tested for photostability and heat stability. Pyridoxine 3-β-D-glucoside was used in formulating lotions, shampoos, eye drops, beverages, etc.

IT 72551-78-1P 849790-03-0P 849790-10-9P

849790-11-0P
RL: COS (Cosmetic use); FFD (Food or feed use); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of stable vitamin B6 derivs. for use in cosmetic and food and pharmaceutical compns.)

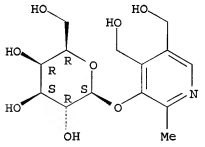
RN 72551-78-1 CAPLUS
CN β-D-Glucopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



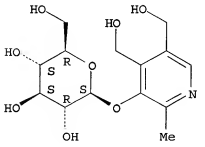
RN 849790-03-0 CAPLUS
CN β-D-Galactopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 849790-10-9 CAPLUS
CN β-D-Glucopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl, hydrochloride (9CI) (CA INDEX NAME)

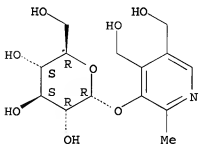
Absolute stereochemistry.



● HCl

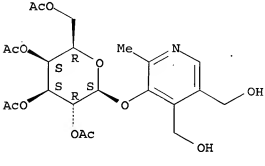
RN 849790-11-0 CAPLUS
CN α-D-Glucopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT 849790-04-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of stable vitamin B6 derivs. for use in cosmetic and food and pharmaceutical compns.)
RN 849790-04-1 CAPLUS
CN β-D-Galactopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl, 2,3,4,6-tetraacetate (9CI) (CA INDEX NAME)

Absolute stereochemistry.



REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:193047 CAPLUS
DOCUMENT NUMBER: 116:193047
TITLE: Pyridoxine-5'-β-D-glucoside affects the metabolic utilization of pyridoxine in rats
AUTHOR(S): Gilbert, Joyce A.; Gregory, Jesse F., III
CORPORATE SOURCE: Food Sci. Hum. Nutr. Dep., Univ. Florida, Gainesville, FL, 32611-0163, USA
SOURCE: Journal of Nutrition (1992), 122(4), 1029-35
CODEN: JONUAI; ISSN: 0022-3166
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A major form of vitamin B-6 in plant-derived foods is pyridoxine-5'-β-D-glucoside. Previous studies have shown that pyridoxine-5'-β-D-glucoside is poorly available as a source of vitamin B-6 in rats and is partially utilized in humans. This research was conducted to determine whether unlabeled pyridoxine-5'-β-D-glucoside affects the metabolic utilization of simultaneously administered isotopically labeled pyridoxine in rats. Three groups of rats were administered a single oral dose of 0,

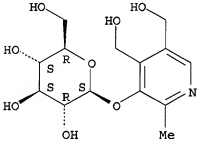
36, or 72 nmol of unlabeled pyridoxine-5'-β-D-glucoside along with 166.5 MBq (240 nmol) of [14C]pyridoxine. Twenty-four hours after administration of the dose the rats were killed, and the isotopic distribution of vitamin B-6 metabolites in liver and urine was determined Urinary 14C and hepatic 14C-labeled pyridoxine phosphate and pyridoxal phosphate were directly related to pyridoxine-5'-β-D-glucoside dose. Hepatic 14C, 14C-labeled pyridoxal, pyridoxine and pyridoxamine, and the concentration of urinary [14C]4-pyridoxic acid, relative to total urinary 14C, were inversely proportional to the dose of pyridoxine-5'-β-D-glucoside. These results provide evidence that pyridoxine-5'-β-D-glucoside quant. alters the metabolism and in vivo retention of [14C]pyridoxine and that pyridoxine-5'-β-D-glucoside may retard the utilization of nonglycosylated forms of vitamin B-6.

IT 72551-78-1
RL: BIOL (Biological study)
(pyridoxine metabolic utilization response to dietary)

RN 72551-78-1 CAPLUS

CN β-D-Glucopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L4 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:	1991:19895 CAPLUS
DOCUMENT NUMBER:	114:19895
TITLE:	Hydrolysis of pyridoxine-5'-β-D-glucoside by a broad-specificity β-glucosidase from mammalian tissues
AUTHOR(S):	Trumbo, Paula R.; Banks, Melanie A.; Gregory, Jesse F., III
CORPORATE SOURCE:	Food Sci. Hum. Nutr. Dep., Univ. Florida, Gainesville, FL, 32611-0163, USA
SOURCE:	Proceedings of the Society for Experimental Biology and Medicine (1990), 195(2), 240-6 CODEN: PSEBAA; ISSN: 0037-9727
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB Research was conducted to evaluate the ability of a broad-specificity β-glucosidase in mammalian tissues to catalyze the hydrolytic release of free pyridoxine from pyridoxine-5'-β-D-glucoside, a naturally occurring form of vitamin B6 in plant-derived foods. Activity was detected in liver and intestinal mucosa using tritiated pyridoxine glucoside as a substrate. In the rat and guinea pig, enzyme activity was greater in intestine than in liver or kidney while even greater activity was detected in human intestinal tissue. Reaction rates were, however, low in all tissues. Hydrolysis of the synthetic substrate 4-methylumbelliferyl-β-D-glucoside was also greatest in intestinal tissue. The characteristics of the enzymic hydrolysis of pyridoxine glucoside to pyridoxine included: (1) most activity in the soluble tissue fraction, (2) a pH optimum of approx. 6.0, and (3) inhibition caused by the addition of Na taurocholate. These characteristics are very similar to

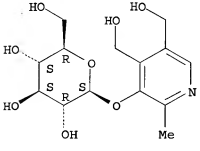
those of the broad-specificity β-glucosidase in mammalian tissues with respect to the hydrolysis of a variety of naturally occurring and synthetic substrates. The apparent Km was greater than 2 mM for pyridoxine glucoside hydrolysis by intestinal prepns. of each species, which is much greater than expected intestinal concns. derived from dietary sources. In vivo studies have indicated that the intestine is involved in the metabolic utilization of dietary pyridoxine glucoside. The results observed here suggest that an alternate process, possibly involving intestinal microorganisms, may also be involved in the in vivo hydrolysis of pyridoxine glucoside.

IT 72551-78-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrolysis of, by broad-specificity glucosidase from human and mammal tissue)

RN 72551-78-1 CAPLUS

CN β-D-Glucopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L4 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1990:54135 CAPLUS

DOCUMENT NUMBER: 112:54135

TITLE: Dietary intake of total and glycosylated vitamin B6 and the vitamin B6 nutritional status of unsupplemented lactating women and their infants

AUTHOR(S): Andon, Mark B.; Reynolds, Robert D.; Moser-Veillon, Phylis B.; Howard, M. Pat

CORPORATE SOURCE: Dep. Hum. Nutr. Food Syst., Univ. Maryland, College Park, MD, USA

SOURCE: American Journal of Clinical Nutrition (1989), 50(5), 1050-8
CODEN: AJCNAC; ISSN: 0002-9165

DOCUMENT TYPE: Journal

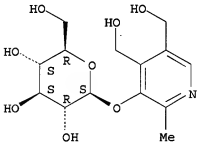
LANGUAGE: English

AB The mean dietary intakes of total and glycosylated vitamin B6, determined from anal. of 3-day diet composites collected from lactating women, were 8.63 and 1.33 μmol/day, resp. A comparison of linear regression models that either included or excluded dietary glycosylated vitamin B6 content indicates that the intake of glycosylated vitamin B6 had little, if any, effect upon maternal plasma pyridoxal 5'-phosphate concentration and maternal urinary excretion of total vitamin B6 and 4-pyridoxic acid. On the basis of guidelines from the literature for evaluating biochem. indexes of vitamin B6 nutriture, the women appeared to be consuming adequate amts. of the vitamin. The mean breast-milk concns. of total and glycosylated vitamin B6 were 733 and 18 mM, resp. The infant plasma pyridoxal 5'-phosphate concentration was 54 nM and all infants had lengths and wts. appropriate for their age.

IT 72551-78-1
RL: BIOL (Biological study)
(nutritional status of, in lactating women and their infants)

RN 72551-78-1 CAPLUS
CN β-D-Glucopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl (9CI) (CA INDEX NAME)

Absolute stereochemistry.

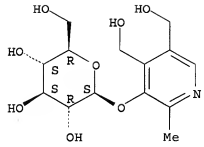


L4 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:185548 CAPLUS
DOCUMENT NUMBER: 108:185548
TITLE: Incomplete utilization of pyridoxine-β-glucoside as vitamin B6 in the rat
AUTHOR(S): Trumbo, Paula R.; Gregory, Jesse F., III; Sartain, Doris B.
CORPORATE SOURCE: Food Sci. Hum. Nutr. Dep., Univ. Florida, Gainesville, FL, 32611, USA
SOURCE: Journal of Nutrition (1988), 118(2), 170-5
CODEN: JONUAI; ISSN: 0022-3166
DOCUMENT TYPE: Journal
LANGUAGE: English

AB This research was conducted to determine the bioavailability of 5'-O-(β-D-glucopyranosyl) pyridoxine (PN-glucoside) during chronic administration in a depletion-repletion bioassay. PN-glucoside was found previously to constitute a major portion of the total vitamin B6 in many foods of plant origin. Following a 14-day depletion period, rats were fed diets containing graded levels of either free pyridoxine (PN) or PN-glucoside for 17-days. Slope ratio anal. of dose-response curves, on the basis of growth and plasma pyridoxal 5-phosphate (PLP) concentration, indicated 10-34% utilization of PN-glucoside relative to the molar response to PN. Erythrocyte aspartate aminotransferase (AspAT) activity and urinary 4-pyridoxic acid concentration were lower and the stimulation of AspAT activity by exogenous PLP was greater for rats fed PN-glucoside than for those fed PN, which indicated reduced vitamin B6 nutriture in response to PN-glucoside. A constant 7-9% of the ingested PN-glucoside was detected in urine in intact form at all dosage levels. These results provide further evidence of noncomplete bioavailability of PN-glucoside and indicate that its extent of utilization is not influenced by its level of dietary intake.

IT 72551-78-1
RL: PROC (Process)
(bioavailability of, as vitamin B6 source)
RN 72551-78-1 CAPLUS
CN β-D-Glucopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl (9CI) (CA INDEX NAME)

Absolute stereochemistry.

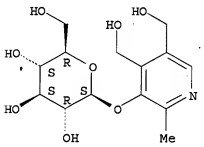


L4 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1980:55172 CAPLUS
DOCUMENT NUMBER: 92:55172
TITLE: A particulate glucosyltransferase catalyzing the formation of 5'-O-(β-D-glucopyranosyl)pyridoxine from pyridoxine: the occurrence in the seedlings of Pisum sativum L
AUTHOR(S): Tadera, Kenjiro; Nakamura, Mahomi; Yagi, Fumio; Kobayashi, Akira
CORPORATE SOURCE: Fac. Agric., Kagoshima Univ., Kagoshima, 890, Japan
SOURCE: Journal of Nutritional Science and Vitaminology (1979), 25(4), 347-50
CODEN: JNSVA5; ISSN: 0301-4800
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The 20,000-50,000 g particulate fraction obtained from pea seedlings with a protein concentration of 20 mg/mL catalyzed the glucosylation of pyridoxine. The rate of glucosylation was linear with time for ≥40 min and proportional to the protein concentration at ≤20 mg/mL. The pH optimum, determined, in several different buffer systems, was between 7.8 and 8.8. Apparent Km values were 0.4 and 0.7 mM for pyridoxine and UDP-glucose resp. The 5'-O-(β-D-glucopyranosyl)pyridoxine reaction product, purified by Sephadex G-10 gel filtration and by paper chromatog., was confirmed by chemical tests and Rf value detns.

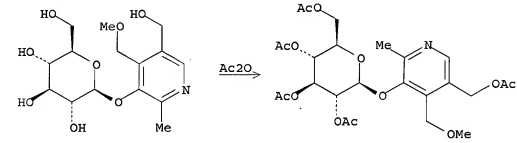
IT 72551-78-1
RL: FORM (Formation, nonpreparative)
(formation. of, from pyridoxine, pea particulate glucosyltransferase catalysis of)
RN 72551-78-1 CAPLUS
CN β-D-Glucopyranoside, 4,5-bis(hydroxymethyl)-2-methyl-3-pyridinyl (9CI) (CA INDEX NAME)

Absolute stereochemistry.



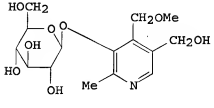
L10 ANSWER 1 OF 1 CASREACT COPYRIGHT 2007 ACS on STN

RX(2) OF 4



REF: Gazzetta Chimica Italiana, 119(1), 63-4; 1989

ACCESSION NUMBER:	111:36634 CASREACT
TITLE:	Isolation of a new compounds related to 4-methoxypyridoxine from Albizzia lucida
AUTHOR(S):	Orsini, Pulvia; Pelizzoni, Francesca; Pulici, Maurizio; Verotta, Luisella
CORPORATE SOURCE:	Dip. Chim. Org. Ind., CNR, Milano, I-20133, Italy
SOURCE:	Gazzetta Chimica Italiana (1989), 119(1), 63-4 CODEN: GCITA9; ISSN: 0016-5603
DOCUMENT TYPE:	Journal
LANGUAGE:	English
GI	

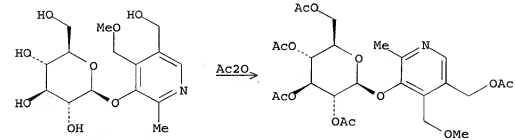


I

AB A new 32-O-glucoside (I) of 3-hydroxy-5-(hydroxymethyl)-4-(methoxymethyl)-2-methylpyridine was isolated from seeds of Albizzia lucida and its structure determined on the basis of hydrolysis and spectral evidence.

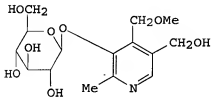
L7 ANSWER 1 OF 1 CASREACT COPYRIGHT 2007 ACS on STN

RX(2) OF 4



REF: Gazzetta Chimica Italiana, 119(1), 63-4; 1989

ACCESSION NUMBER:	111:36634 CASREACT
TITLE:	Isolation of a new compounds related to 4-methoxypyridoxine from Albizzia lucida
AUTHOR(S):	Orsini, Fulvia; Pelizzoni, Francesca; Pulici, Maurizio; Verotta, Luisella
CORPORATE SOURCE:	Dip. Chim. Org. Ind., CNR, Milano, I-20133, Italy
SOURCE:	Gazzetta Chimica Italiana (1989), 119(1), 63-4 CODEN: GCITA9; ISSN: 0016-5603
DOCUMENT TYPE:	Journal
LANGUAGE:	English
GI	



I

AB A new 32-O-glucoside (I) of 3-hydroxy-5-(hydroxymethyl)-4-(methoxymethyl)-2-methylpyridine was isolated from seeds of Albizzia lucida and its structure determined on the basis of hydrolysis and spectral evidence.

L7 ANSWER 9 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1978:49161 CAPLUS
DOCUMENT NUMBER: 88:49161
ORIGINAL REFERENCE NO.: 88:7759a,7762a
TITLE: Isolation from rice bran of a bound form of vitamin B6 and its identification as 5'-O-(β-D-glucopyranosyl)pyridoxine
AUTHOR(S): Yasumoto, Kyoden; Tsuji, Hideaki; Iwami, Kimikazu; Mitsuda, Hisateru
CORPORATE SOURCE: Fac. Agric., Kyoto Univ., Kyoto, Japan
SOURCE: Agricultural and Biological Chemistry (1977), 41(6), 1061-7
CODEN: ABCHA6; ISSN: 0002-1369
DOCUMENT TYPE: Journal
LANGUAGE: English
AB One of the bound forms of vitamin B6 [8059-24-3] occurring in rice bran was isolated in a faintly yellowish syrup by repeating ion-exchange and paper-partition chromatog. techniques. The behaviors of the isolate on thin-layer and Aminex A-5 column chromatograms were coincident with those of synthetic pyridoxine β-D- glucoside, which was obtained by Koenigs-Knorr condensation of α4,3-O-isopropylidene pyridoxine and 2,3,4,6-tetra-O-acetyl-α-D-glucopyranosyl bromide. On acid hydrolysis, the isolate gave pyridoxine and glucose. Glucose bound to the 5-hydroxymethyl group of pyridoxine, because the isolate did not react with 2,6-dichloroquinone chlorimide in the presence of boric acid. An equimolar amount of pyridoxine and D-glucose was produced with an equivalent consumption of the isolate by the action of β- glucosidase. No essential difference between the isolated and synthetic prepns. could be detected in UV and NMR spectra. Thus, the chemical structure of the isolate was 5'-O-(β-D-glucopyranosyl) pyridoxine [19316-63-3].

L7 ANSWER 10 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1977:466953 CAPLUS
DOCUMENT NUMBER: 87:66953
ORIGINAL REFERENCE NO.: 87:10639a,10642a
TITLE: Availability as vitamin B6 and small intestinal absorption of pyridoxine-β-D- glucoside in rats
AUTHOR(S): Tsuji, Hideaki; Okada, Jungo; Iwami, Kimikazu; Yasumoto, Kyoden
CORPORATE SOURCE: Fac. Agric., Kyoto Univ., Kyoto, Japan
SOURCE: Bitamin (1977), 51(4), 153-9
CODEN: BTMNA7; ISSN: 0006-386X
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB Utilization of a chemical synthesized pyridoxine -β-D- glucoside [63245-12-5] by vitamin B6 [8059-24-3]-deficient rats was examined in terms of its effects on the urinary excretion of xanthurenic acid [59-00-7] and on the activation of vitamin b6 enzymes, glutamate-pyruvate transaminase [9000-86-6] and cysteine desulfhydrase [9012-96-8]. Oral administration of pyridoxine-β- glucoside (30 μg/animal/day) for 12 days has led to a complete restoration of the urinary excretion of xanthurenic acid to a normal level. The levels of the enzymic activities in liver and erythrocytes recovered with statistical significance to those in the pos. control rats administered pyridoxine. The β-glucosidase catalyzing hydrolysis of pyridoxine-β-glucoside was found in small intestine at a significant level, and at a somewhat lesser level in liver and blood. It thus appears that pyridoxine-β- glucoside in vivo substitutes for vitamin B6 by enzymic conversion to free pyridoxine either

before or after absorption in the small intestine. The postabsorptive conversion is supported by permeation of pyridoxine-β-glucoside into the serosal side with everted sacs and by the high effectiveness as vitamin B6 of i.v. injected pyridoxine-β-glucoside.

L7 ANSWER 11 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1973:107995 CAPLUS
DOCUMENT NUMBER: 78:107995
ORIGINAL REFERENCE NO.: 78:17339a,17342a
TITLE: Transglycosidation to vitamin B6 by microorganisms. VI. Formation of pyridoxine glucoside-synthesizing enzyme (α- glucosidase) of Micrococcus species number 431
AUTHOR(S): Kawai, Fusako; Horii, Takio; Yamada, Hideaki; Ogata, Koichi
CORPORATE SOURCE: Kyoto Res. Inst. Food. Sci., Kyoto Univ., Kyoto, Japan
SOURCE: Agricultural and Biological Chemistry (1972), 36(13), 2607-9
CODEN: ABCHA6; ISSN: 0002-1369
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A pyridoxine (I) glucoside-synthesizing enzyme (II) purified from Micrococcus species number 431 (and, as reported previously, a member of the α- glucosidase group, also catalyzing the transfer of the glucosyl residue of sucrose (III), maltose (IV), and O-α-D- glucoside to I, to form I glucoside) was formed in substantial amts., in the presence of either III or IV, in a basal medium in which III was replaced by 1 of 4 other C compds. Although glucose and glycerol accelerated growth, they had no effect on the II formation. The transglucosidase activity on a IV-containing medium was increased .apprx.15-fold compared with a glucose-containing medium. I evidently inhibited the growth and formation of II. The optimal concentration of IV for the formation of II was 3%, and II formation was markedly affected by the initial pH of the medium, the optimal pH being 6.0; no growth was observed at pH 5.0. The II activity in cell exts. attained a maximum after 40 hr of cultivation, accompanied by consumption of II. On longer cultivation, however, II activity gradually decreased. On the other hand, II activity in culture broth was .apprx.10% of that cell exts. II could be induced by a 2nd culture of Micrococcus species number 431 on a IV-peptone medium, suggesting that II was also an inducible enzyme, like α-glucosidase from other microbial sources.

L7 ANSWER 12 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1972:109608 CAPLUS
DOCUMENT NUMBER: 76:109608
ORIGINAL REFERENCE NO.: 76:17677a,17680a
TITLE: Transglycosidation to vitamin B6 by microorganisms. V. Enzymic properties of pyridoxine glucoside-synthesizing enzyme (α- glucosidase) of Micrococcus species Number 431
AUTHOR(S): Kawadi, Fusako; Yamada, Hideaki; Ogata, Koichi
CORPORATE SOURCE: Dep. Agric. Chem., Kyoto Univ., Kyoto, Japan
SOURCE: Agricultural and Biological Chemistry (1971), 35(11), 1660-7
CODEN: ABCHA6; ISSN: 0002-1369
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Partially and highly purified prepns. of a pyridoxine glucoside-synthesizing enzyme from Micrococcus Number 431

were stable at pH 7.0 and 0-30°. Maximum activity was at pH 8.0 and 37°. Sucrose, phenyl-α-D- glucoside, and maltose served as glucosyl donors and of the vitamin B6 compds. tested only pyridoxine served as a glucosyl acceptor. The activity was inhibited by p-chloromercuribenzoate and heavy metal ions and somewhat by monoiodoacetate. Addition of 2-mercaptoethanol overcame the inhibition by p-chloromercuribenzoate and monoiodoacetate. Thus, the enzyme appears to be a glucoside-invertase and a sulfhydryl enzyme. The enzyme was not affected by chelating agents and not activated by metal ions.

L7 ANSWER 13 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1971:120435 CAPLUS
DOCUMENT NUMBER: 74:120435
ORIGINAL REFERENCE NO.: 74:19435a,19438a
TITLE: Transglycosidation to vitamin B6 by microorganisms. IV. Purification of a bacterial enzyme catalyzing pyridoxine glucoside synthesis
AUTHOR(S): Kawai, Fusako; Yamada, Hideaki; Ogata, Koichi
CORPORATE SOURCE: Dep. Agric. Chem., Kyoto Univ., Kyoto, Japan
SOURCE: Agricultural and Biological Chemistry (1971), 35(2), 184-90
CODEN: ABCHA6; ISSN: 0002-1369
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Sarcina and Micrococcus have the ability to synthesize pyridoxine glucoside. Both pyridoxine-5 -α-D- glucoside and pyridoxine-4 -α-D- glucoside are produced. The bacteria were grown on sucrose, K phosphate buffer, NaCl, MgSO4, and yeast media at pH 7.0. Reducing sugars were determined by the Somogyi-Nelson method, pyridoxine glucoside was separated by paper chromatog. in a BuOH:HOAc:water (4:1:1) solvent, products detected with a uv lamp and extracted from the paper with 50% EtOH 1:12.5% NaOAc for 90 min at 37°. The product was assayed at 470 nm after reaction with diazotized p-aminoacetophenone. Glucosidase and transglucosidase were assayed in phosphate buffer pH 8.0 containing sucrose, β-mercaptoethanol and a suitable amount of enzyme for 30 min at 30°. Reaction was stopped by heating and the amount of reducing sugar was measured. The transglucosidase system also containing pyridoxine. The enzyme was purified by (NH4)2SO4 fractionation, DEAE-Sephadex, hydroxylapatite and Sephadex G-100 chromatog. to about 354-fold purification and was homogeneous by polyacrylamide electrophoresis and ultracentrifugation.

L7 ANSWER 14 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1971:9712 CAPLUS
DOCUMENT NUMBER: 74:9712
ORIGINAL REFERENCE NO.: 74:1537a,1540a
TITLE: Vitamin B2-glycosides. XXIV. Formation of pyridoxine glycoside-like compounds by enzyme preparations having activity of forming riboflavine glycosides
AUTHOR(S): Suzuki, Yukio; Uchida, Kei; Miyake, Toshio
CORPORATE SOURCE: Ohara Inst. Agric. Biol., Okayama Univ., Okayama, Japan
SOURCE: Bitamin (1970), 42(3), 187-92
CODEN: BTMNA7; ISSN: 0006-386X
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
GI For diagram(s), see printed CA Issue.
AB Pyridoxine glycoside-like compds. were synthesized by partially purified enzyme prepns. from Leuconostoc mesenteroides, Aspergillus niger, and Mucor javanicus, and by pure β-galactosidase

from Escherichia coli having activity for forming riboflavine glycosides. The formation of riboflavine-α- glucoside in the growth media of Sarcina species containing sucrose and riboflavine (I) was closely related to the glucosidation of pyridoxine (II).

L7 ANSWER 15 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1969:524851 CAPLUS
DOCUMENT NUMBER: 71:124851
ORIGINAL REFERENCE NO.: 71:23231a,23234a
TITLE: Transglycosidation to vitamin B6 by microorganisms. II. Chemical structure of pyridoxine glucoside
AUTHOR(S): Ogata, Koichi; Uchida, Yoshihiro; Kurihara, Norio; Tani, Yoshiki; Tochikura, Tatsurokuro
CORPORATE SOURCE: Kyoto Univ., Kyoto, Japan
SOURCE: Journal of Vitaminology (1969), 15(2), 160-6
CODEN: JVITA5; ISSN: 0022-5398
DOCUMENT TYPE: Journal
LANGUAGE: English
GI For diagram(s), see printed CA Issue.
AB Pyridoxine G (I) was shown to not be a β-D-glucoside by the failure of a β- glucosidase prepared from Aspergillus niger (CA 45: 3445d) to hydrolyze it, and is probably an α-D- glucoside, since it underwent some hydrolysis by an α-D- glucosidase prepared from brewer's yeast (S. Chiba, et al., 1962). I was dehydrogenated by a pyridoxine dehydrogenase from yeast (CA 55: 7493a) to a pyridoxal, which formed a pyridoxal D-glucoside semicarbazone, which was possible if the main component were pyridoxine 5'-α-D- glucoside (II). I was chromatographed on Dowex 1 + 2 (borate form) into fraction 1, pyridoxine 4'-α-D- glucoside (III), and fraction 2. Acetylation of I with Ac2O and pyridine and treatment with dry HCl gave pyridoxine 4'-α-D- glucoside hexaacetate-HCl, m. 154-7°, and pyridoxine 5'-α-D- glucoside hexaacetate-HCl (IV). A mixture of 1.04 g. isopropylidene pyridoxine (V), 11.0 g. Ag2CO3, 23.0 g. Drierite, and 120 ml. dry benzene was stirred 5 hrs. in the dark, then stirred with 0.3 g. AgClO4 and 2.0 g. 2,3,4,6-tetra-O-benzyl-D-glucopyranosyl chloride in 40 ml. dry benzene until V could no longer be detected by thin-layer chromatog., worked up, and the benzyl groups were removed from the syrupy product by treatment with 50 ml. 85% EtOH containing 1 g. hydrogenated Pd chloride 48 hrs. to yield isopropylidene pyridoxine 5'-α-D-glucose, which was heated with 80% HOAc in a boiling water bath 2 hrs. to give II; the β-D-anomer was removed by exhaustive hydrolysis with the β-D- glucosidase from Aspergillus niger. Acetylation of synthetic II gave IV as a colorless syrup. N.M.R. and uv spectral curves were shown.

L7 ANSWER 16 OF 18 MEDLINE on STN
ACCESSION NUMBER: 2003578696 MEDLINE
DOCUMENT NUMBER: PubMed ID: 14660349
TITLE: Use of borate to control the 5'-position-selective microbial glucosylation of pyridoxine.
AUTHOR: Wada Koichi; Asano Yasuhisa
CORPORATE SOURCE: Biotechnology Research Center, Toyama Prefectural University, Kosugi, Toyama 939-0398, Japan.. k-wada@daiichi-fcj.co.jp
SOURCE: Applied and environmental microbiology, (2003 Dec) Vol. 69, No. 12, pp. 7058-62.
Journal code: 7605801. ISSN: 0099-2240.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals

ENTRY MONTH: 200404
ENTRY DATE: Entered STN: 16 Dec 2003
Last Updated on STN: 17 Apr 2004
Entered Medline: 16 Apr 2004

AB Nearly 100% 5'-position selectivity of transglucosylation from maltodextrin to pyridoxine (PN) by cells of Verticillium dahliae TPU 4900 was observed when the reaction was carried out with borate. The same effect of borate was observed not only during synthesis of pyridoxine 5'-alpha-D-glucoside by partially purified enzyme of this strain but also during synthesis of this compound by other microorganisms and with other enzymes (alpha-glucosidase and cyclomaltodextrin glucanotransferase). The effect was thought to be caused by the formation of a borate complex with 3- and 4'-position hydroxyl groups of PN. A decrease in the formation of pyridoxine 5'-alpha-D-glucoside was observed in the reaction with borate, but this decrease was overcome by optimizing the pH and increasing the amount of cells in the reaction mixture.

L7 ANSWER 17 OF 18 MEDLINE on STN
ACCESSION NUMBER: 2003203314 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12723597
TITLE: Improvement in 5'-position-selective glucosylation of pyridoxine by Verticillium dahliae TPU 4900.
AUTHOR: Wada Koichi; Asano Yasuhisa
CORPORATE SOURCE: Biotechnology Research Center, Toyama Prefectural University, 5180 Kurokawa, Kosugi, Toyama 939-0398, Japan.. k-wada@daiichi-fcj.co.jp
SOURCE: Bioscience, biotechnology, and biochemistry, (2003 Mar) Vol. 67, No. 3, pp. 508-16.
Journal code: 9205717. ISSN: 0916-8451.
PUB. COUNTRY: Japan
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200309
ENTRY DATE: Entered STN: 2 May 2003
Last Updated on STN: 3 Sep 2003
Entered Medline: 2 Sep 2003

AB Optimization of culture and reaction conditions for 5'-position-selective transglucosylation to pyridoxine by Verticillium dahliae TPU 4900 was investigated. V. dahliae TPU 4900 had high transglucosylation activity when grown with soluble starch as a carbon source and organic nitrogens such as Esusan meat as a nitrogen source at 15-20 degrees C. Both the yield of pyridoxine 5'-alpha-D-glucoside (PN-5'-alpha-G) and the 5'-position-selectivity reached a maximum when an intact-cell reaction was done at 50-60 degrees C and pH 7 with additions of dextrin. The transglucosylation activity in culture broth was 71 times with the optimization of culture conditions that under the conditions used for screening. The productivity of PN-5'-alpha-G synthesis was 6.9 times that under the initial conditions when the reaction conditions of intact cells were optimized. From 1000 mM (206 g/L) pyridoxine hydrochloride, PN-5'-alpha-G was synthesized to the concentration of 300 mM (98.4 g/L as PN-5'-alpha-G) with 5'-selectivity of 85% in 53 h by intact cells of V. dahliae TPU 4900.

L7 ANSWER 18 OF 18 MEDLINE on STN
ACCESSION NUMBER: 91046154 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2122467
TITLE: Hydrolysis of pyridoxine-5'-beta-D-glucoside by a broad-specificity beta-glucosidase from mammalian tissues.
AUTHOR: Trumbo P R; Banks M A; Gregory J F 3rd
CORPORATE SOURCE: Food Science and Human Nutrition Department, University of

Florida, Gainesville 32611-0163.
CONTRACT NUMBER: DK37481 (NIDDK)
F32-DK08179 (NIDDK)
SOURCE: Proceedings of the Society for Experimental Biology and Medicine. Society for Experimental Biology and Medicine (New York, N.Y.), (1990 Nov) Vol. 195, No. 2, pp. 240-6. Journal code: 7505892. ISSN: 0037-9727.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199012
ENTRY DATE: Entered STN: 8 Feb 1991
Last Updated on STN: 3 Feb 1997
Entered Medline: 4 Dec 1990

AB Research was conducted to evaluate the ability of a broad-specificity beta-glucosidase in mammalian tissues to catalyze the hydrolytic release of free pyridoxine from pyridoxine-5'-beta-D-glucoside, a naturally occurring form of vitamin B6 in plant-derived foods. Activity was detected in liver and intestinal mucosa using tritiated pyridoxine glucoside as a substrate. In the rat and guinea pig, enzyme activity was greater in intestine than in liver or kidney while even greater activity was detected in human intestinal tissue. Reaction rates were, however, low in all tissues. Hydrolysis of the synthetic substrate 4-methylumbelliferyl-beta-D-glucoside was also greatest in intestinal tissue. The characteristics of the enzymatic hydrolysis of pyridoxine glucoside to pyridoxine included: (i) most activity in the soluble tissue fraction, (ii) a pH optimum of approximately 6.0, and (iii) inhibition caused by the addition of sodium taurocholate. These characteristics are very similar to those of the broad-specificity beta-glucosidase in mammalian tissues with respect to the hydrolysis of a variety of naturally occurring and synthetic substrates. The apparent Km was greater than 2 mM for pyridoxine glucoside hydrolysis by intestinal preparations of each species, which is much greater than expected intestinal concentrations derived from dietary sources. In vivo studies have indicated that the intestine is involved in the metabolic utilization of dietary pyridoxine glucoside. The results observed here suggest that an alternate process, possibly involving intestinal microorganisms, may also be involved in the in vivo hydrolysis of pyridoxine glucoside.

L7 ANSWER 4 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:604932 CAPLUS

DOCUMENT NUMBER: 125:301365

TITLE: Preparation of two pyridoxine-α-glucosides by α-glucosidase from Mucor javanicus

AUTHOR(S): Suzuki, Yukio; Doi, Yusuke; Uchida, Kei; Tsuge, Haruhito

CORPORATE SOURCE: Res. Inst. Bioresour., Okayama Univ., Kurashiki, 710, Japan

SOURCE: Oyo Toshitsu Kagaku (1996), 43(3), 369-372
CODEN: OTKAE3; ISSN: 1340-3494

PUBLISHER: Nippon Oyo Toshitsu Kagakkai

DOCUMENT TYPE: Journal

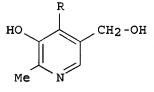
LANGUAGE: English

AB Two glucosylated compds. of pyridoxine were synthesized in a considerable yield from dextrin and pyridoxine by Mucor javanicus α- glucosidase. The ratio of the products was 1:1. The structures of the products were identified as 5'-O-(α-glucopyranosyl) pyridoxine and 4'-O-(α-glucopyranosyl) pyridoxine by elementary analyses, UV, 1H- and 13C-NMR spectra, hydrolysis by α- and β-glucosidases, migration on paper electrophoresis, and Gibbs reaction in the presence and absence of boric acid.

L7 ANSWER 1 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:1125170 CAPLUS
DOCUMENT NUMBER: 142:70772
TITLE: Regioselective glucosylation of pyridoxine by microbial glycosyltransferase for pyridoxine 5'-α- glucoside synthesis
INVENTOR(S): Wada, Koichi; Sakamoto, Keiji; Asano, Yasuhisa
PATENT ASSIGNEE(S): Daiichi Fine Chemical Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004357591	A	20041224	JP 2003-160235	20030605
PRIORITY APPLN. INFO.:			JP 2003-160235	20030605

OTHER SOURCE(S): MARPAT 142:70772
GI



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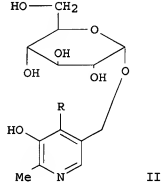

II

AB A glycosyltransferase capable of catalyzing the conversion of pyridoxine compds. (I) (R = hydrogen atom, lower alkyl group, lower hydroxyalkyl group, carboxyl group, or aldehyde group) to compound (II), derived from microorganisms, and use in enzymic synthesis of pyridoxine 5'-α- glucoside, are disclosed. Pyridoxine-5'-α- glucoside is manufactured by fermentation with microorganism in the presence of boric acid or salt. The pyridoxine is selectively glycosidated at the 5'-position and the byproduct pyridoxine-4'-glucoside is insignificant. II has better photostability, and does not have sour and bitter tastes. It can be absorbed and easily converted to pyridoxal phosphate. Microorganisms from culture collections and isolates from nature were screened for the ability to catalyze the regioselective glucosylation of pyridoxine (PN) to produce pyridoxine 5'-α-D- glucoside (PN-5'-α-G) or pyridoxine 4'-α-D- glucoside (PN-4'-α-G). Transglucosylation activity specific to 5'-position of PN was found in fungi belonging to genera such as Coriolus and Verticillium, and activity at the 4'-position of PN was found in bacteria belonging to genera such as Bacillus and Serratia. From 100 mM PN, intact cells of

Verticillium dahliae TPU 4900 produced 42 mM (13.9 mg/mL) PN-5'-α-G after 70 h of reaction. Optimization of culture and reaction conditions for 5'-position-selective transglucosylation to pyridoxine by Verticillium dahliae TPU 4900 was investigated. V. dahliae TPU 4900 had high transglucosylation activity when grown with soluble starch as a carbon source and organic nitrogens such as Esusan meat as a nitrogen source at 15-20°C. Both the yield of pyridoxine 5'-α-D- glucoside (PN-5'-α-G) and the 5'-position-selectivity reached a maximum when an intact-cell reaction was done at 50-60°C and pH 7 with addns. of dextrin. The transglucosylation activity in culture broth was 71 times with the optimization of culture conditions that under the conditions used for screening. The productivity of PN-5'-α-G synthesis was 6.9 times that under the initial conditions when the reaction conditions of intact cells were optimized. From 1000 mM (206 g/L) pyridoxine hydrochloride, PN-5'-α-G was synthesized to the concentration of 300 mM (98.4 g/L as PN-5'-α-G) with 5'-selectivity of 85% in 53 h by intact cells of V. dahliae TPU 4900.

L7 ANSWER 2 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:994589 CAPLUS
DOCUMENT NUMBER: 140:180185
TITLE: Use of borate to control the 5'-position-selective microbial glucosylation of pyridoxine
AUTHOR(S): Wada, Koichi; Asano, Yasuhisa
CORPORATE SOURCE: Biotechnology Research Center, Toyama Prefectural University, Toyama, 939-0398, Japan
SOURCE: Applied and Environmental Microbiology (2003), 69(12), 7058-7062
CODEN: AEMIDF; ISSN: 0099-2240
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 140:180185
AB Nearly 100% 5'-position selectivity of transglucosylation from maltodextrin to pyridoxine (PN) by cells of Verticillium dahliae TPU 4900 was observed when the reaction was carried out with borate. The same effect of borate was observed not only during synthesis of pyridoxine 5'-α-D- glucoside by partially purified enzyme of this strain but also during synthesis of this compound by other microorganisms and with other enzymes (α-glucosidase and cyclomaltodextrin glucanotransferase). The effect was thought to be caused by the formation of a borate complex with 3- and 4'-position hydroxyl groups of PN. A decrease in the formation of pyridoxine 5'-α-D- glucoside was observed in the reaction with borate, but this decrease was overcome by optimizing the pH and increasing the amount of cells in the reaction mixture
REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 3 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:296977 CAPLUS
DOCUMENT NUMBER: 139:35135
TITLE: Improvement in 5'-position-selective glucosylation of pyridoxine by Verticillium dahliae TPU 4900
AUTHOR(S): Wada, Koichi; Asano, Yasuhisa
CORPORATE SOURCE: Biotechnology Research Center, Toyama Prefectural University, Toyama, 939-0398, Japan
SOURCE: Bioscience, Biotechnology, and Biochemistry (2003), 67(3), 508-516
CODEN: BBBIEJ; ISSN: 0916-8451
PUBLISHER: Japan Society for Bioscience, Biotechnology, and Agrochemistry

DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 139:35135
AB Optimization of culture and reaction conditions for 5'-position-selective transglucosylation to pyridoxine by Verticillium dahliae TPU 4900 was investigated. V. dahliae TPU 4900 had high transglucosylation activity when grown with soluble starch as a carbon source and organic nitrogens such as Esusan meat as a nitrogen source at 15-20°C. Both the yield of pyridoxine 5'-α-D-glucoside (PN-5'-α-G) and the 5'-position-selectivity reached a maximum when an intact-cell reaction was done at 50-60°C and pH 7 with addns. of dextrin. The transglucosylation activity in culture broth was 71 times with the optimization of culture conditions that under the conditions used for screening. The productivity of PN-5'-α-G synthesis was 6.9 times that under the initial conditions when the reaction conditions of intact cells were optimized. From 1000 mM (206 g/L) pyridoxine hydrochloride, PN-5'-α-G was synthesized to the concentration of 300 mM (98.4 g/L as PN-5'-α-G) with 5'-selectivity of 85% in 53 h by intact cells of V. dahliae TPU 4900.
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 4 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1996:604932 CAPLUS
DOCUMENT NUMBER: 125:301365
TITLE: Preparation of two pyridoxine-α-glucosides by α-glucosidase from Mucor javanicus
AUTHOR(S): Suzuki, Yukio; Doi, Yusuke; Uchida, Kei; Tsuge, Haruhito
CORPORATE SOURCE: Res. Inst. Bioresour., Okayama Univ., Kurashiki, 710, Japan
SOURCE: Oyo Toshitsu Kagaku (1996), 43(3), 369-372
CODEN: OTKAE3; ISSN: 1340-3494
PUBLISHER: Nippon Oyo Toshitsu Kagakkai
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Two glucosylated compds. of pyridoxine were synthesized in a considerable yield from dextrin and pyridoxine by Mucor javanicus α- glucosidase. The ratio of the products was 1:1. The structures of the products were identified as 5'-O-(α-glucopyranosyl) pyridoxine and 4'-O-(α-glucopyranosyl) pyridoxine by elementary analyses, UV, 1H- and 13C-NMR spectra, hydrolysis by α- and β-glucosidases, migration on paper electrophoresis, and Gibbs reaction in the presence and absence of boric acid.

L7 ANSWER 5 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1996:485509 CAPLUS
DOCUMENT NUMBER: 125:245721
TITLE: Enzymic synthesis of glycosylated and phosphatidylated biologically active compounds
AUTHOR(S): Suzuki, Yukio; Kim, Young Hoi; Uchida, Kei; Takami, Masaaki
CORPORATE SOURCE: Res. Inst. Bioresour., Okayama Univ., Kurashiki, 710, Japan
SOURCE: Oyo Toshitsu Kagaku (1996), 43(2), 273-282
CODEN: OTKAE3; ISSN: 1340-3494
PUBLISHER: Nippon Oyo Toshitsu Kagakkai
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Japanese
AB A review with 49 refs. The enzymic glycosylation and phosphatidylation of biol. active compds. are described. PhCH2OH, 2- or 4-HOC6H4CH2OH,

geraniol, and citronellol were glycosylated by incubating with Aspergillus niger β- glucosidase in solution containing cellobiose and MeCN, followed by extraction with BuOH, treatment with Amberlite XAD-2 and SiO2-gel chromatog. to give β- glucosides of each compound in crystalline state. β-Galactosides of farnesol and geranylgeraniol were obtained in similar manner by treating with A. oryzae β-galactosidase in the presence of lactose. β- Glucoside and β-galactoside of tryptophol were also prepared enzymically by incubating tryptophol with resp. enzyme and Ph β- glucoside or o-nitrophenyl β-galactoside. All these β-glycosylated compound were odorless. α-Type glycosides were prepared by the glucosyl transfer action of bacterial cyclodextrin glucanotransferase (CGTase) from dextrin. Glucosyl transfer was observed not only to CH2OH of PhCH2OH, and related alcs., riboflavin, pyridoxine, thiamine (B1), and BuOH, but also to the OH at the inositol moiety of kasugamycin, at C-4 of glucose moieties of ginsenosides Rc and Rg1, at C-3 of fructose, and also to the OH of sec- and tert-Bu alcs. quercetin, vanillin, ethylvanillin, PhOH, pyrocatechol, pyrogallol, gallic acid, and protocatechuic acid, showing broad acceptor specificity of CGTase. α- Glucosylated compds. of aromatic alcs., vanillin, ethylvanilin, and B1 were odorless. All glycosylated antioxidants were much more stable than aglycons against oxidation by peroxidase with H2O2. Enzymic transfer of dipalmitoylphosphatidyl (DDP)-residue from 1,2-dipalmitoyl-3-sn-phosphatidylcholine (DPPC) to the CH2OH in vitamins B1, B2, B6, pantothenic acid, B1 disulfide-related compds., arbutin, kojic acid, genipin, and dihydroxyacetone was studied in order to increase their lipophilic properties. Reactions were carried out by stirring NaOAc buffer containing acceptors and phospholipase D (PLD) from Streptomyces with CHCl3 or EtOAc solution of DPPC at 37°, followed by extraction with CHCl3 and SiO2-gel chromatog. DDP-arbutin and DDP-kojic acid showed the same inhibitory activity to tyrosinase as their parent compds., and DDP-genipin showed 6-52 times stronger cytotoxicity than genipin to HeLa, HEL, and MT-4 cells. DDP-genipin reacted with phenylalanine in organic solvents to give a clear blue solution having a similar color to a natural blue pigment "gardenia blue". Immobilized PLD with Amberlite IRC-50 retained 74% of its initial activity after 10 times-repeated batch reaction for DDP-compound synthesis.

L7 ANSWER 6 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:	1991:19895 CAPLUS
DOCUMENT NUMBER:	114:19895
TITLE:	Hydrolysis of pyridoxine-5'-β-D- glucoside by a broad-specificity β-glucosidase from mammalian tissues
AUTHOR(S):	Trumbo, Paula R.; Banks, Melanie A.; Gregory, Jesse F., III
CORPORATE SOURCE:	Food Sci. Hum. Nutr. Dep., Univ. Florida, Gainesville, FL, 32611-0163, USA
SOURCE:	Proceedings of the Society for Experimental Biology and Medicine (1990), 195(2), 240-6 CODEN: PSEBAA; ISSN: 0037-9727
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB Research was conducted to evaluate the ability of a broad-specificity β- glucosidase in mammalian tissues to catalyze the hydrolytic release of free pyridoxine from pyridoxine -5'-β-D- glucoside, a naturally occurring form of vitamin B6 in plant-derived foods. Activity was detected in liver and intestinal mucosa using tritiated pyridoxine glucoside as a substrate. In the rat and guinea pig, enzyme activity was greater in intestine than in liver or kidney while even greater activity was detected in human intestinal tissue. Reaction rates were, however, low in all tissues. Hydrolysis of the synthetic substrate 4-methylumbelliferyl-β-D- glucoside was also greatest in

intestinal tissue. The characteristics of the enzymic hydrolysis of pyridoxine glucoside to pyridoxine included: (1) most activity in the soluble tissue fraction, (2) a pH optimum of approx. 6.0, and (3) inhibition caused by the addition of Na taurocholate. These characteristics are very similar to those of the broad-specificity β-glucosidase in mammalian tissues with respect to the hydrolysis of a variety of naturally occurring and synthetic substrates. The apparent Km was greater than 2 mM for pyridoxine glucoside hydrolysis by intestinal prepns. of each species, which is much greater than expected intestinal concns. derived from dietary sources. In vivo studies have indicated that the intestine is involved in the metabolic utilization of dietary pyridoxine glucoside. The results observed here suggest that an alternate process, possibly involving intestinal microorganisms, may also be involved in the in vivo hydrolysis of pyridoxine glucoside.

L7 ANSWER 7 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:453491 CAPLUS
DOCUMENT NUMBER: 109:53491
TITLE: Changes in the vitamin B-6 content in potatoes during storage
AUTHOR(S): Addo, Constant; Augustin, Jorg
CORPORATE SOURCE: Dep. Food Sci. Hum. Nutr., Washington State Univ., Pullman, WA, 99164, USA
SOURCE: Journal of Food Science (1988), 53(3), 749-52
CODEN: JFDSAZ; ISSN: 0022-1147
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The nature of the repeatedly reported increase of vitamin B6 in Russet Burbank potatoes stored for 30 days and 9 mo was investigated. Potatoes contained pyridoxine, pyridoxamine, pyridoxal phosphate, and a pyridoxine glucoside. While pyridoxamine and pyridoxal phosphate concns. remained unchanged, there was a sharp increase in pyridoxine glucose during storage indicating a possible synthesis of vitamin B6 during storage. In general, good agreement existed between the data generated by microbial anal. and those obtained by the HPLC method.

L7 ANSWER 8 OF 18 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1986:477863 CAPLUS
DOCUMENT NUMBER: 105:77863
TITLE: Synthesis of pyridoxine-β-glucoside by rice bran β-glucosidease and its in situ absorption in rat small intestine
AUTHOR(S): Iwami, Kimikazu; Yasumoto, Kyoden
CORPORATE SOURCE: Dep. Agric. Chem., Kyoto Prefect. Univ., Kyoto, 606, Japan
SOURCE: Nutrition Research (New York, NY, United States) (1986), 6(4), 407-14
CODEN: NTRSDC; ISSN: 0271-5317
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A major component of β- glucosidase [9001-22-3] multienzymes was highly purified from rice bran, and by its use, pyridoxine-β- glucoside (PIN-β-G) was synthesized from p-nitrophenyl-β- glucoside [2492-87-7] and pyridoxine [65-23-6]. The synthetic product contained both 4'- [71555-11-8] and 5'-isomers [103584-58-3], which were successfully separated by high-voltage paper electrophoresis. The 4'-isomer was used as a convenient substrate for intestinal absorption of PIN-β-G, because it gave a pos. reaction with 2,6-dibromoquinone chlorimide, irresp. of the presence or absence of borate. The absorption

expts. with in situ, isolated rat jejunal loops revealed that the PIN-β-G level remaining in the loop did not significantly change within 1 h and that δ-gluconolactone, a potent inhibitor of β-glucosidase, did not affect the luminal disappearance of PIN-β-G. It thus can be assumed that PIN-β-G is absorbed across the intestinal wall by a mechanism of simple diffusion, not by hydrolase-mediated transport.

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     (FILE 'HOME' ENTERED AT 16:30:03 ON 21 NOV 2007)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 16:33:52 ON 21 NOV 2007
L1          138 S PYRIDOXINE (P) ?GLUCOS?  (P) SYNTHE?
L2            0 S L1 AND LEAVING GROUP?
L3            0 S L1 AND HALOGEN?
L4            0 S L1 AND HALIDE?
L5           28 S L1 AND ?THIO?
L6          110 S L1 NOT L5
L7           18 S L6 AND ?GLUCOSIDE?
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